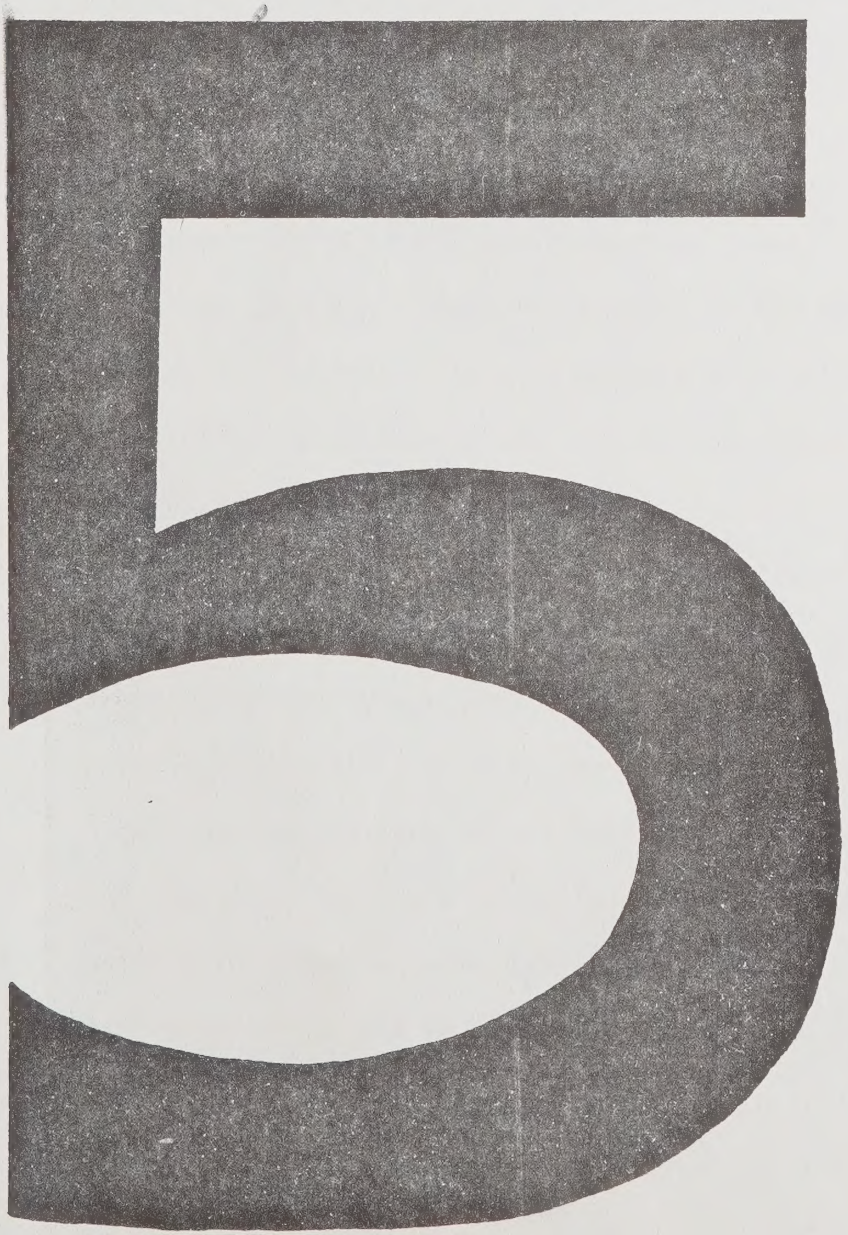
SAN FRANCISCO MUNICIPAL RAILWAY • 949 PRESIDIO AVENUE, SAN FRANCISCO, CALIF. 94115



5 YEAR PLAN 1977-1982

ISSUE PAPER 2: TRANSIT PLANNING THOUGHT IN SAN FRANCISCO

Tom Matoff

Municipal Railway
Planning Division

June 1977

F100984

SUMMARY

The Municipal Railway is one of San Francisco's greatest civic assets, a public service of immeasurable benefit to the economic and social life of the metropolis. It possesses an extraordinary and largely untapped potential to increase its usefulness to all citizens and its ability to serve as a principal instrument in the protection and enhancement of the quality of life in San Francisco. However, the Railway faces many serious problems which threaten its stability as a transit system and its longevity as an institution. Underlying many of these problems and inhibiting their solution are anti-quated assumptions about the nature of transit and its role in the modern American city.

This paper explores the development of these assumptions in terms of the evolution of transit planning thought in San Francisco. It demonstrates that the present Municipal Railway network orientation is premised upon historical transportation considerations and not on contemporary needs of the city. It relates this finding to modern transit planning theory, and identifies some basic principles and purposes which are relevant to San Francisco's modern transit needs. Specifically, it demonstrates the need for a multi-destinational transit network (one which is genuinely useful and attractive for trips between almost all points in the city) in San Francisco. The paper closes with a warning that failure of the Railway to rationalize its service pattern will set the stage for a gradually increasing irrelevance of transit in San Francisco, a situation implying more cuts in the Railway's budget and an accelerated deterioration in the Railway's service.

The function of planning
is to render actual and
evident that which is
potential and inevident.

Benton Mackaye
The New Exploration

TABLE OF CONTENTS

1. INTRODUCTION

Transit Planning, generally speaking, consists of devising ways to define and realize the potential of a public transportation service in the city. In San Francisco, the perception of the potential of an urban transit system has undergone several metamorphoses from the time of Crim and Bowman's "Yellow Line" omnibus to the development of the Municipal Railway 5-Year Plan. As the perception of public transportation's potential and purpose has changed, so transit planning thought has undergone several transformations, generally corresponding to economic and political stages of the city's development. This paper briefly traces the evolution of transit planning thought in San Francisco, offers a modest discussion of the present needs of the Municipal Railway in relation to contemporary planning, and suggests some theoretical and practical planning axioms appropriate to the modern needs of San Francisco and its Municipal Railway.

2. THE ENTREPRENEURIAL PERIOD (1852-1907)

In its earliest stage, transit development, in San Francisco as elsewhere, was strictly the result of profit-seeking by capitalists looking for an attractive direct return on investment in street railway or omnibus operation, or by land owners wanting to enhance the accessibility, and therefore value, of their holdings. Planning, in the generally accepted modern sense of the word, did not exist; under conditions of relatively free market entry, a large number of small, private, competing transit companies - many operating but a single route - went into operation. The notion of systematic and coordinated development of a city-wide service was completely alien to this arrangement of transit affairs.

Where the perceived purpose of a street railway company was to function as a profitable transportation utility, "planning" - insofar as it represented the processes leading to decisions on design of routes and services - often consisted of researching franchise titles to find usable streets not already blocked by the tracks or legal rights of another company, or of devising tactics to occupy strategic sections of streets in order to prevent the entry of competition.

In San Francisco, as elsewhere, competitive lines tended to focus on downtown, with the resulting reticule of horse, cable and electric streetcar lines predominantly radial in character (that is, radiating out from downtown as the spokes of a wheel radiate out from the hub). Competition produced lines on almost every available and usable east-west street which penetrated the central area and permitted through service to the ferries; the Ferry Building was a major attractor which represented, according to a later analyst, "... a wonderful

reservoir of street railway traffic."[1] When through the consolidations of 1893 and 1902 many of these competing lines came to be operated by a single owner, operation on parallel streets continued, in part because of the generally higher level of transit use in that period but also because of the desire to block the entry of new competition. The force of habit also undoubtedly played an important role.

Lines keyed to land development were, perhaps, less common, but also dated from the earliest days of transit operation. The Market Street line and its Hayes Valley branch, now trolleycoach line 21, originated in 1857 with a a franchise grant to Thomas Hayes, who wanted to make his "suburban" tracts accessible to the city. A similar concern for accessibility led Adolph Sutro in the 'nineties to build the Clement Street electric line; in this case, Sutro wanted a nickel fare to his Baths in order to obtain a greater share of the recreation business. The Market Street Railway would not grant him one on their California Street "Cliff Line," so he built his own line paralelling it one block to the south. Both are still operated by the Municipal Railway. As late as 1907, the Parkside Franchises were granted to provide a cross-Sunset connection on Twentieth Avenue from the Haight Street - Lincoln Way trackage to the promoters' real estate holdings near today's Sigmund Stern Grove. The energies used to secure these franchises later figured prominently in the celebrated city government scandals of 1906-1910.[2]

In sum, the expression of entrepreneurial development was an almost entirely radial route structure. Economically, downtown dominated the activity of the city and its travel patterns, and the prinicipal design characteristic of transit extensions was the quest to "link up" outlying areas with downtown. (So important did this driving characteristic become that it remains the dominating design principle of most American transit systems). Lack of unified ownership ruled out consideration of system-wide, city-wide mobility at a single fare prior to the consolidation of 1893.

The largest secondary market was the recreational travel to Golden Gate Park and the Ocean, and a rivalry similar to that for Downtown business developed for that traffic. Though less impressive in volume, this competition did, on occasion, manifest itself in a spirited way:

> The worst clash came regarding the traffic to the Ocean Beach. The Market Street Railway Company, through a subsidiary, the Park and Ocean Railroad, operated a steam dummy from the Haight Street terminus, out Lincoln Way to Ocean Beach, where the present loop of the No. 5 . . . (line). . . is now in existence. An extra fare was exacted for this ride, and on Sundays there was a very heavy patronage. But with the advent of the Omnibus Company to the common terminus of the Haight Street, the Park and Ocean, and the Omnibus lines, the Omnibus Company took over 50 per cent of the Ocean Beach traffic, much to the discomfiture of the Market Street Railway Company.
>
> The latter now determined to extend its cable line to First Avenue, where the Ocean Beach steam trains would terminate, thus removing them from the vicinity of the Omnibus terminal. The Market Street Company actually constructed its tracks on Stanyan south of Haight, leacing a gap which was to be closed in by removal of the Haight Street turntable and connecting the new track with a curve to the Haight Street line.
>
> The Omnibus Company, biding its time, took advantage of this situation and one very rainy Saturday night brought its construction crews to this terminal, where they built about 110 feet of track, connecting their turntable with the new Stanyan Street tracks. They concreted them solidly and

> promptly ran cars over the tracks in order to hold them against possible opponents.
>
> These cars were filled with construction crews. Food and beverages, soft and otherwise, were provided, also card tables for the convenience of the crews. The Market Street Company later sent out their own construction crews for the purpose of tearing up these tracks. But the Market Street Company had failed to provide entertainment and refreshments for their crews, and it is easy to conclude which of the crews remained in possession over the succeeding Sunday.
>
> Of course, this short track connection was of a different gauge, being 3' 6", as against the Market Street's standard gauge of 4' 8½". However, the maneuver prevented the latter company from putting in its curve, and the Omnibus Company remained in possession of its share of the Ocean Beach business, which was augmented by the adjacent baseball grounds and the convenient location of the bandstand in Golden Gate Park, prior to the Mid-Winter Fair.
>
> A further complication in the fight herein described developed when the San Francisco and San Mateo electric line, which also had a franchise on Stanyan Street, became jittery and laid an electric track on top of the Market Street cable tracks. This is turn aroused the Metropolitan line, with the result that one cable track was surmounted by two electric tracks, not one of which could be used. It was a battle royal that attracted crowds on that rainy Sunday, to watch the operations, which included many fights among the workmen of the four companies concerned.[3]

Amalgamations of lines large enough to be considered small "systems" in their own right did try to serve both downtown and the Park - the Market Street Cable Railway Co. and its subsidiary, the Park and Ocean Railroad, present the most obvious example. However, the Ominibus Cable and the Ferries and Cliff House companies behaved similarly, the latter clearly incorporating into its very name the principal perceived function of transit service in the late nineteenth century. Almost no true crosstown service existed; the Polk and Larkin cable line of the Sutter Street Railway Co. was the important

exception to this, and, if one were to define crosstown very liberally, the O'Farrell, Jones and Hyde line of the California Street cable system.

More extensive non-downtown riding became possible after the consolidations of 1893 and 1902, and, in fact, the Market Street Railway made an important improvement to crosstown travel when it opened the Fillmore Street line in the 'nineties. Later, some attempt was made to develop this trade through the operation of other cross-radial services, essentially on existing radial tracks - the 24-Mission and Richmond line, using Divisadero Street, and the 23-Valencia and Gough Streets line. The former line lasted until 1941, but neither was ever a very strong service. Both simply duplicated in part stronger radial routes operating over much of the same trackage; the Gough Street trackage between Market and McAllister was too short to exploit effectively as a viable crosstown facility in its own right, and through crosstown service on Divisadero Street had to await the bus conversion of 1941.

Despite the development of some strong crosstown lines, then, the entrepreneurial period of transit development in San Francisco produced a predominantly radial transit network orientation with many parallel redundancies. This network reflected its historical development under conditions of strenuous competition, basically for one market, and the overbearing economic and social importance of downtown in the nineteenth century.

3. THE PERIOD OF MUNICIPAL DEVELOPMENT (1900-1944)

In the period of municipal development of public transportation in San Francisco, the profit motive took a decidedly inferior role to the drive to "open up" unsettled parts of the city. Transit was perceived less as a money-making enterprise than as a tool of land development, an instrument of deliberate public policy under the direct administration of City Hall. A secondary consideration was that the Municipal Railway be used tactically to coerce the Market Street Railway Company into selling out to the city.

The Charter of 1900 declared it to be the city's policy to acquire and control public utilities, but it took some years and several elections to begin implementation of this policy with respect to transit services. An opportunity appeared to exist in the imminent expiration of the Geary Street, Park and Ocean Railroad's cable franchise set for 1903; however, municipal proposals to rebuild the Geary Street cable line using the electric conduit method employed in New York and Washington failed at the polls in 1902 and 1903. In early 1906, in response to an attempt by the United Railroads to electrify cable and steam transit lines with overhead wires, former Mayor James D. Phelan and the Spreckels interests organized a new corporation, the Municipal Street Railways of San Francisco, to construct and demonstrate the operability of an electric streetcar line using the conduit method. The Company was promoted as a public interest venture, and its charter provided that the property could be acquired by the city at any time for the amount of the capital investment, plus interest; the corporate papers were filed with the Secretary of State on April 17, 1906.[4]

After the fire, most of the United's cable system was electrified using overhead wires, and the Phelan - Spreckels proposal was forgotten. However, the provisions of the charter, a bitter and protracted transit strike in 1907 and the involvement of the United Railroads in the city's post-fire political scandals led to increased public clamor for municipal operation. A third bond issue for the Geary Street reconstruction was held in June, 1909, and failed to win a two-thirds majority by only 431 votes. Finally, a follow-up election was held in December of that year in which the Municipal Railway was established by a four-to-one vote.

It was in this period that organized and professional transit planning really began. By this time, city planning itself was a recognized profession and activity; in San Francisco, the Burnham Plan of 1905 had dealt principally with general questions of traffic circulation, based on boulevard theories of the Beaux Arts tradition. However, Burnham did call for the development of subways and recommended a streetcar tunnel under the Corona Heights/Buena Vista ridge, foreseeing the construction in the late 'twenties of the Duboce (Sunset) Tunnel familiar to habitués of the N-Judah. In his discussion of tree planting and boulevard design, he also touched on reserved street railway track treatment that is still in vogue in many European cities and is being rediscovered in this country's renewed interest in light rapid transit.[5]

Although the first lines of the Municipal Railway were created by replacing the facilities of the Geary Street cable line with a new electric system, the city's committment to street railway operation, coming as it did in the full tide of the Progressive Era, clearly went beyond operation of cars on one street. The desire to expand to the west and southwest, to penetrate new

districts and compete in old ones, to provide a usable system without reliance upon the existing private system, and the obvious need for major capital expenditures in order to tunnel through the city's mountainous spine, all argued for a comprehensive and ordered approach; the public was clearly behind the Municipal Railway, and the politicians and principal bureaucrats needed the "big picture" in order to put together a comprehensive transit development program. In addition, a major world's fair was being planned for an almost inaccessible part of San Francisco; in an era when the level of personal mobility was still equated with the quality of transit service rather than with automobile ownership rates, the inaccessibility of Harbor View (the Marina) posed a serious threat to the success of the 1915 Panama Pacific International Exposition.

These, then, are the conditions which gave rise to modern transit planning in San Francisco. The man who was San Francisco's first real transit planner was Bion J. Arnold, a consulting engineer from Chicago. His Report on the Improvement and Development of the Transportation Facilities of San Francisco, published in March, 1913, was the first in-depth, systematic and professional study of the design and provision of transit services in San Francisco. An exhaustive and dazzling work, Arnold's Report laid the foundation for Municipal Railway development, and his plans were, in the main, progressively implemented up to the time of the Great Depression. A major bond issue, based largely on his proposals, was approved in 1913.

The successful implementation of Arnold's proposals rested, as ever, in the authority and commitment of "City Hall." In particular, the political support of Mayor James Rolph and what we would today call the "advocacy role" of City Engineer M. M. O'Shaughnessy were responsible for the rapid and extensive growth of the Municipal Railway. After Arnold's departure, O'Shaughnessy himself played the role of chief planner and strategist for the railway, proposing extensions, covetously eyeing the expiration dates of Market Street Railway franchises, and supervising the design and construction of major new facilities - track, carbarns, streetcars, tunnels.

O'Shaughnessy's "presence" in City Hall, Mayor Rolph's support, and the administration of the Railway under the Board of Public Works, offered an unparalleled opportunity to design transit services and implement them according to plan. By the time the Depression, the 1932 Charter and depoliticization had brought expansion to a halt, the Municipal Railway had become an effective and far-flung competitor to the Market Street Railway.

Arnold's report laid the foundation for O'Shaughnessy's activist involvement. After O'Shaughnessy's death, and under the new Charter, the planning role fell to the office of the Manager of Utilities and his staff in the Public Utilities Commission's Bureau of Engineering. But the exceptional coincidence of political and transit development interests had passed, and the mid-thirties proposals for rapid transit development were never implemented.

The Municipal Railway network, prior to the consolidation of 1944, was as radial in character as that of the private company with which it competed. Arnold's report had taken a systematic, long-run view of transit development and finance and included extensive recommendations for crosstown services: "Crosstown lines have been regarded," his Report indicated, "as essential parts of a radial transit system."[6]

But implementation rested on the same assumption as the developmental lines of the entrepreneurial period - building links between new areas of the City and downtown. Of the twelve original Municipal Railway streetcar lines, only one, the H-Potrero, was a crosstown line. Some consideration was given to north-south lines in the western part of the City, notably on Masonic Avenue and from the stub end of the "A" on Tenth Avenue across Golden Gate Park; it is likely, however, that had these lines been built, they would have been operated as branches of radial routes rather than as crosstown services in their own right. It was only in 1929 that a north-south bus service was developed west of Twin Peaks, and despite experimentation with a Great Highway route, the only other Municipal crosstown service at the time of the 1944 Consolidation of the Municipal and Market Street Railways was the 19th Avenue line.

4. POST-WAR RETRENCHMENT (1945-1962)

The demands of the war and the legal requirements of the Market Street purchase agreement prevented any immediate system restructuring at the time of the consolidation. The need for rationalization to improve both service to the passenger and the economic health of the system had been obvious for some time. As early as 1927, Delos F. Wilcox, an expert on franchises and transit economics who had been brought to San Francisco to advise the city on the question of the mass expiration of Market Street Railway franchises set for 1929, had this to say:

> In view of the great importance of a well laid out system for efficiency in public service and economy in operation, the city should take advantage of its present strategic position to develop the Municipal Railway system by extensions and the absorption of existing lines into an ideal local transportation agency, adapted to the topographical and other permanent conditions in San Francisco. It would be a mistake just to swallow the Market Street Railway System, hook, bait and sinker, and let the city's future transportation development be determined by what might be characterized as the rights of the old rails that happen to have been laid under the impetus of early competition, without any general plan. In its present position, the city does not need to be controlled by such considerations . . . . The problem of effecting economies through rerouting cars, eliminating duplications of service, and discarding lines that are too unprofitable to justify their continued operation, calls for a special study in detail with the cooperation of the Municipal Railway officials . . . make provision for a detailed study of street railway traffic requirements and for the development of a complete plan of rerouting the cars and rearranging the car yards and car houses, so as to utilize to the best advantage the street railway facilities of the city, and eliminate superfluous trackage, useless car miles, and all unnecessary overhead expenses . . . . The city should not consider any alternative that would contemplate the continuance of competitive operation past the fall of 1929. Of course this study and rerouting plan should be made in cooperation with the city engineer and operating officials of the Municipal Railway. It

> should be undertaken without delay, as it is essential to any plan for retaining the five-cent fare on the consolidated municipal system without a subsidy from taxes.[7]

With the granting in 1930 of a 25-year operating permit to the Market Street Railway, the franchise crisis passed, and the rationalization study proposed by Wilcox was forgotten; his comments, though, retain an uncomfortably accurate and appropriate ring.

It was not until the consolidation of 1944 that a citywide transit study was done. In that year, Leonard V. Newton, Vice President of the Market Street Railway, was hired by the Public Utilities Commission to prepare a plan for post-war transit modernization.

The Newton Plan did propose elimination of some redundancies in the system, and recommended retention of a strong core of basic radial streetcar lines. Opportunities for easy non-downtown travel were to be improved by implementing Newton's proposed extension of crosstown streetcar lines H-Potrero to the south and F-Stockton across the South-of-Market to the SP Depot via the tracks of the 20-line. However, the essential character of the newly consolidated Municipal network, with parallelling radial lines, would have remained. Newton expected post-war ridership to level off at close to 200 million annual passengers, and this optimistic forecast doubtless had some bearing on his estimate of the number of competing downtown lines necessary.

The Newton Plan represented, in essence, a post-war modernization of the status-quo. The proposed commitment to transit modernization by the City would have been a major one; he proposed the acquisition of 313 new PCC streetcars, 223 new trolley coaches, 215 buses, and a major program of track and overhead reconstruction, carbarn conversion and street paving. But Newton's conception of the potential of transit service did not markedly differ from that of his predecessors; in fact, the Newton Plan represented less of a departure from its antecedents than had the Arnold Report in 1913. By accepting the basic network structure as it existed in 1944, Newton neglected, and probably could not foresee, one of the important issues of post-war transportation: the great increase in the importance of non-downtown travel, and the need for the City's transit system to tap this market in order to maximize the overall transit "modal split" (transit share of all trips). The inherited pattern of service was not challenged, although the city had changed dramatically in the intervening decades:

> In preparing this plan, the Consulting Engineer has attempted to hold changes in routing of the various existing lines to a minimum. In the absence of complete data on origin and destination of transit patrons I have assumed that present routings, developed over a period of years, meet the requirements of the City fairly well, and therefore the best plan seemed to be to review these existing lines and recommend changes or abandonments only where same were absolutely necessary.[8]

Few of Newton's recommendations were implemented, and subsequent plans failed to deal effectively with the re-orientation of the route structure to reflect the changing transportation patterns of the city.

In 1947, Mayor Roger Lapham convened an Administrative Transportation Planning Council to deal with the problem of postwar transit planning, this time in coordination with city-wide street and highway planning, and with close linkage to general city planning. The proposed transit element of the plan was, in the end, similar to the Newton Plan, the principal difference being a reduced reliance on streetcars and a complementary shift in emphasis to the trolley coach. An important feature of this plan, however, was that it had "teeth"; it was directly tied, under the sponsorship of the Mayor, to a $20 million bond issue for transit modernization in the November 1947 election. This measure, and a companion issue to retire the outstanding Market Street Railway debt and thus permit major network changes to occur, were passed by the electorate after a vigorous campaign; they were the last Municipal Railway bond issues ever to be approved by the voters.

The same election brought a new administration to City Hall, and, now that $20 million were available to be spent, an official "second look" at the plans developed under Lapham. The Administrative Transportation Planning Council lingered on to administer the production of a new traffic and transit plan by consultant DeLeuw Cather; at the moment of this report's production, Mayor Elmer Robinson obtained on loan from Mayor O'Dwyer of New York the services of Transportation Commissioner Colonel Sydney Bingham for a quick report on what to do about San Francisco's "transit crisis," and recommendations on how to spend the bond money. Both of these reports called for even further cut-backs in the use of streetcars in the city, DeLeuw Cather recommending a great increase in trolleycoaches beyond the number proposed in the Planning Council's 1947 plan, and Bingham proposing, for the first time in San Francisco,

a massive committment to motor buses.

It is a chief characteristic of these plans that they dealt extensively with questions of mode, or change of mode, deriving in part from the dilapidated condition of the Railway's facilities and in part from the availability of a large sum of money for their replacement and renewal. The DeLeuw Cather Plan did propose many route modifications, in addition to the mode change. However, despite some important rationalizations (such as elimination of the Clement and Polk lines), it did not examine, or purport to revise, the network from a systemic point of view.

The rash of post-war studies was followed by the extended sojourn of a house consultant and "expediter" who was hired to plan and supervise the transition from a predominantly streetcar system to a basically rubber-tired one. This man was Colonel Marmion D. Mills, one-time regional sales manager for General Motors' Yellow Coach bus division, and the first president of National City Lines.[9] Mills, in a later report for another system, would choose to identify as a pre-eminent qualification his involvement in the conversion from streetcars to rubber tired vehicles of no fewer than twelve transit systems, including the Municipal Railway and the Seattle Transit System; he was briefly General Manager of the latter.[10]

In keeping with the general preoccupation of transit planning in the post-war period, Colonel Mills devoted his attentions chiefly to the questions of

modal change and not of system reorientation. He did tinker with the route structure, and many of the details in the present network reflect the actions of this period. The cable car system consolidation of 1954-1957, for example, which saw the abandonment of the California line west of Van Ness Avenue, the O'Farrell, Jones and Hyde line, the Jones Shuttle, the Washington-Jackson line and the California and Hyde powerhouse, and the creation of the Powell and Hyde line, was the implementation of Col. Mills' "Plan B". Unable to foresee the tremendous economic growth of the Northern Waterfront, Mills' perception of the cable network did not extend beyond the boundaries of the minimal attainable system. However, the Railway network as a whole remained relatively unchanged throughout his tenure.

In sum, the post-war years, which offered a chance to rationalize and strengthen the network in the wake of the MUNI/Market Street Railway consolidation, represented an opportunity lost. Despite the growing importance of trips to non-Downtown destinations and the long-obvious need to prune the transit tree, the predominantly radial network in place in the late 'fifties would have been familar to transit officials of the 'twenties, even down to the route numbering of most of the basic trunk lines. Declines in patronage and increases in operating costs led to perennial deficits and the beginnings of continuing ad valorem tax support. But these did not in any case lead to a fundamental re-assessment of the Railway's role in the city's transportation scheme.

In fact, to accompany the retrenchment in streetcar operation, patronage and farebox revenues there was also a retrenchment in the perception of transit's part in the daily lives of San Franciscans. In 1913, before the advent of massive automobilization and in the period of Downtown's economic, social and political hegemony, Bion Arnold's conception of transit was as a universal service. Transit planning's reaction to changes in these conditions, following the vacillating fortunes of the industry in depression, war and post-war automibilism, was, in essence, defeatist:

> The decline in passenger riding is national in scope as more people everywhere choose private transportation to meet their daily travel needs, regardless of relative expense. The freedom of action and comfort of the automobile outweigh the factors of cost of ownership and operation.[11]

It is also clear that there was knowledge of the great change in transportation patterns in the post-war years brought about by automobile use and new land development:

> The five year period since the end of World War II has seen the greatest increase in the use of the private automobile in our history . . . . the construction of huge housing developments west of Twin Peaks and in other perimeter areas and the building of vast commercial districts to service these residential areas is changing the business pattern. All of this has resulted in more and more use of private cars with a corresponding reduction in the use of mass transit.[12]

But there did not follow from this the further realization that major change in the network structure would be necessary to end the steady erosion of patronage and regain some of what was lost. Decline was accepted as a given part of the operating environment, together with the tacit assumption of the downtown route orientation's inherent correctness.

It was not sensed that the Railway might have the ability, through a basic and systematic re-structuring of its service pattern, to combat the automobile and re-invigorate its patronage figures. The legacy of the post-war period was the continuation of the predominantly radial system from the eras which had created it into an era in which it was increasingly inappropriate.

5. BART AND AFTERWARD (1962-1977)

The BART election of 1962 provided not only for regional rapid transit, but also for the construction of the long dreamed of Market Street subway for Municipal Railway streetcars. Despite the long history of plans for such a facility, the Railway was not immediately prepared for its construction or operation.

Coincident with the need to make operational plans and decisions for the Market Street subway there existed the need to make broader decisions about the Railway generally. The post-war decline in patronage levelled off in 1958, and for some ten years thereafter there ensued a slow but steady rise in the number of revenue passengers. By 1967, by holding fares down, keeping a large volume of service on the street and subsidizing operations from ad valorem taxes, the Railway's patronage had returned to the levels of 1955, a remarkable feat among North American transit systems. However, the large fleet of trolley coaches purchased from the 1947 bond funds were aging, as were the diesel buses leased from the Mack Company in the late 'fifties to replace the White buses purchased from the 1947 bond issue. Other apparent needs were the declining state of the electrical facilities, a long string of miscellaneous improvements and track reconstruction on streetcar and cable car lines.

To analyze these needs, and to deal with the question of network rationalization - particularly with respect to the BART feeder function - a major new study was commissioned, the first since the post-war spate of plans relating to "modernization." The Northern California Transit Demonstration Project,

funded by the federal Department of Housing and Urban Development, was completed in 1967 by the engineering firm of Simpson and Curtin. The basic objective of this study was the integration of the three major Bay Area carriers - Muni, BART and AC Transit. But the study also made far-reaching recommendations for changes in the Municipal Railway route structure and fleet mix.

The basic premise of the Simpson-Curtin plan for the Municipal Railway, and in this it is unique among major San Francisco transit planning studies, was an objective attributed to Mayor John F. Shelley that everyone in the city be within 20 minutes of downtown by transit.[13] This objective, which apparently was not challenged in the course of the study, led to a proposal for shortening and converting streetcar lines M and N into rapid transit lines, elimination of streetcar service on lines J, K and L, and construction of a Geary rapid transit line. Major re-routings were proposed to convert surface lines into feeders to the rapid transit lines. There would also have been a massive reduction in trolley coach operation through dieselization, truncation or elimination of lines 5, 6, 7, 8, 9, 14, 21 and 33.

The Simpson-Curtin recommended plan, reflecting the major design objective, was based almost exclusively on a radial "corridor" analysis. The Final Report, while giving slight notice to improved crosstown service, dwelt almost exclusively with downtown travel, and contained virtually no analysis of the opportunity to tap the major transportation market of non-radial trips.

The Simpson-Curtin proposals went ignored. Popular support for continued streetcar and trolley coach operation, and failure to win over a strong local constituency in support of internal rapid transit development left the Northern California Transit Demonstration Project recommendations without any independent strength or standing. In the late 'sixties, following a bond issue defeat, a non-profit San Francisco Municipal Railway Improvement Corporation was set up to finance the reconstruction of the Railway's facilities. Over a period of years, decisions were made to retain all five streetcar lines for subway-surface operation, and to replace completely the trolley coach fleet. Thus the post-BART modernization of the Municipal Railway was to be accomplished "in place."

Some attempt was made to make system modifications for the more limited purpose of integration with BART in the Mission Corridor. The BART-Muni Coordination Study identified numerous route changes and extensions to bring local lines in this corridor to BART stations. Another product of this effort was the BART-Muni half-fare transfer. Because of the necessarily limited scope of this effort, no basic reorientation of the Railway network was involved, although some important improvements in connecting neighborhoods to regional transit opportunities were achieved.

The need for a study of wider scope became especially apparent when in the course of the BART-Muni effort, attempts to re-arrange lines for the purpose of inter-system integration gave rise to basic questions about the lines' operation beyond the study boundaries.

Federal and regional interest in a systemwide study developed as a result of extensive federal funding a modernization projects in the late '60's and early '70's. This interest led to the Planning, Operations and Marketing (POM) Study of 1974-1977, a major effort to evaluate the status of the Railway and to propose systematic changes in service. An on-board passenger survey was conducted to provide an adequate data base on existing patronage patterns, and a series of reports dealing with specialized subjects (e.g. garage site evaluation, N-J track connections) were produced.

From the point of view of the perception of the capabilities of transit in the city, however, the POM Study recommendations for route structure re-orientation represent an important and radical departure from assumptions characterizing the long string of transit studies beginning with the Newton Plan of 1945. The POM consultant, Wilbur Smith, has recommended that the introduction of higher capacity modes on some radial routes, i.e. the "Muni-Metro" streetcar subway service, be used as the opportunity to reduce duplicative surface services, and that these be redeployed on a comprehensive system of cross-town and cross-radial lines. In particular, a virtual "transit grid" would be established in the city, within the constraints imposed by topography and San Francisco's disjointed street system. Such a grid would offer relatively direct travel paths between almost all origins and destinations in the city, with frequent service on all lines, minimum transfer times and, in general, a maximum of one transfer.

The Wilbur Smith approach represents the first significant break in the chain of transit planning thought since the Municipal Railway - Market Street Railway consolidation of 1944; it represents, fifty years late, the answer to Delos F. Wilcox's recommendation for a study to design an effective and economical service. The successful implementation of a plan based on its philosophy would mean the end of the era in which, despite the advice of men like Delos Wilcox, San Francisco just swallowed " . . . . the Market Street Railway System, hook bait and sinker, and let the city's . . . . transportation development be determined by what might be characterized as the rights of the old rails that happen to have been laid under the impetus of early competition, without any general plan."

The Department of City Planning's "Transportation: Strategy and Programs" document of 1976 grasped the significance of the POM proposal for route re-orientation, and supported its philosphy in its own terms:

> About 80 percent of Muni routes are oriented towards downtown, yet there is considerable need for increased crosstown and inter-neighborhood travel. Muni now captures 40-50 percent of the downtown market . . . , but less than one-fifth of the non-downtown trips; clearly the greatest potential for an increase in the overall impact of the Municipal Railway on transportation patterns in the city lies in the improvement in the transit modal split for non-downtown trips, although an upgrading of downtown service is also to be desired.
>
> Due to present financial constraints, the most efficient method for providing this increased service is by a careful examination and reorganization of present routes and schedules on the basis of origins and destinations of anticipated system users and with objective criteria available from the P.O.M. study. The introduction of new crosstown services can only take place in the context of the development of a multi-destinational network that

> will make transit a realistic alternative for most journeys made within the City, and for principal corridor journeys across the City line.[14]

The Municipal Railway 5-Year Plan, a master plan for transit development and the first such effort to be produced by a professional in-house Muni planning staff, will incorporate the philosophy and many of the specifics of the POM recommendations. A transit "master plan" mandated by UMTA and MTC regulations, the 5-Year Plan proposals will reflect a tempering of Wilbur Smith's study by the practical experience of Railway staff, by the involvement of neighborhood and other citizens' groups, and by the knowledge that it will take time to re-deploy the massive facilities of the system. But, as discussed in Chapter 6, the need for major change is undeniable; the 5-Year Plan is premised on this change.

6. WHAT IS TO BE DONE? TEN FUNDAMENTALS

The endorsement of a major reorientation of the Municipal Railway network by the POM Study consultants, the creation of a permanent in-house Planning Division in the Municipal Railway, and the emergence of the 5-Year Plan for San Francisco transit development, coming simultaneously as they have, create an unprecendented opportunity to reverse the Railway's slow decline into irrelevance. The Railway can and must do more for the city to ensure its own survival, and to produce the maximum benefit for the people who have contributed and continue to contribute so heavily to its capital investment and its operating resources.

In this context the role of transit planning is generally the same as in historic periods of transit development - to identify and define the potential of a transit system in the urban context, including the economic context of scarcity, and to define the means to realize that potential. Given the pattern of Municipal Railway service as determined by successive epochs of expansion and contraction, and with a fuller realization of the range of transportation needs in the city, the transit planning profession is compelled to postulate a number of fundamental principles.

1. Transit's share of the total transportation market in San Francisco, its "modal split", must be increased.

   This has been the fundamental assumption from which the preceding critique of transit planning thought in San Francisco has proceeded.

It may be thought too obvious to need restatement, but in view of the prevailing confusion in transportation planning and administration, and the avowed hostility of some influential organizations, it would be wise to state this explicitly and forcefully. There is no good reason why the transit modal split in San Francisco should not be increased from its current approximate 25% to 40%. This would imply a revenue patronage increase on the Muni to early 1950's levels of some 180,000,000 annually.

2. The Municipal Railway network must, therefore, be revised so that a greater variety of trips can be reasonably made on it by direct and non-circuitous routes on which frequent service is operated.

Although the opportunities for crosstown travel on the Municipal Railway are greater than on many other transit systems, it remains predominantly radial in character. Of 82 routes, 46 routes, or 56% can be classified as radial lines, that is, lines which radiate out from downtown. More importantly, these lines account for 72% or almost three-fourths of the scheduled vehicle mileage.

However, Downtown does not account for this large a percentage of the total trips made within San Francisco. Bay Area Transportation Study data show that Downtown, even if very liberally defined, is at either the origin or destination end of fewer than one-third of these trips. While Downtown represents the Railway's and the city's largest single transportation market, it is important not to lose sight of the fact that many more trips are being made in and between other parts of the

city; when looking at these trips, we see that relatively few of them are now being made on transit.

Generally speaking, the relative quality of transit, vis-a-vis the automobile, is not very high for non-downtown journeys. It is this relative quality which is the basis for modal choice, and hence the ability of the Railway to attract a significant proportion of the non-downtown travellers in San Francisco who form an approximate two-to-one majority. The Municipal Railway route structure must be revised so that the relative quality of transit for these non-Downtown trips can be improved.

The only way this can be accomplished in San Francisco is through the establishment of a pattern approaching or functioning as that of a "grid" in most of the city. The classic grid concept deploys transit vehicles on a rectangular system of north-south and east-west lines. Transit passengers can travel between any two points in the service area using direct paths similar to those used by motorists, for instance by just travelling north or south on one major street and then going east or west on another. All points are interconnected with no more than one transfer; if service is frequent (i.e. headways of 10-12 minutes or less) transfer times are minimized and transit travel becomes competitive with automobile travel.

Since trip patterns tend to be relatively dispersed in North American cities a grid pattern makes transit a useful alternative to the automobile for the great majority of trips; predominantly radial systems

cannot compete for most trips since transit paths and travel times on such a system between most points - and therefore for most of the trips that people are actually making - generally involve a lengthy detour and multiple transfers. On a grid system, downtown patronage tends to be concentrated on relatively fewer transit lines; this higher level of patronage supplies the economic justification for the provision of a higher level of transit service on those lines. The result, paradoxically, is that the grid system, with fewer downtown lines, provides better downtown service; in Toronto, for example, where the grid pattern is most extensively employed, transit captures 40% of the downtown travel market on a 24-hour basis , and 83% during the peak hour.[15]

The topographic conditions and street pattern of San Francisco prevent the establishment of a literally rectangular route grid; many apparent inconsistencies, such as shuttles, diagonal radial lines and L-shaped cross-radials would remain. But the reform of the system to make possible one-transfer riding between almost all origin and destination pairs by a direct route would require the establishment of a grid-approximating network in most of the city. The probable form of a network appropriate to San Francisco would be one having a number of strong radial transit lines focusing on downtown (though fewer than at present), and a greater number of L-shaped cross-radial and true north-south crosstown lines offerring frequent service.

3. Downtown radial service should be rationalized so that better service can be concentrated on fewer lines.

The re-structuring of the Railway network from a predominantly radial one to more of an approximated grid would reduce the number of radial lines. However, the service on the balance of the lines should be greatly improved so that capacity would be maintained or improved, and so that transfer times from cross-town lines would be kept short. Frequency is an extremely important determinant of patronage, since a frequent service means short waiting times and results in a higher travel speed. In fact, frequency of service has been found, in a number of studies, to be the single most important factor influencing transit usage.[16] Since the resources of the Railway are not limitless, their deployment in the transit service pattern is a matter of priorities. If the objective is to maximize patronage, and as frequency is a very strong determinant of patronage, it is only logical to stress frequency of service, rather than proximity to many infrequent services.

A case in point is Muni Metro, which represents a capital investment of some $300 million. This investment in subway, track, cars and associated equipment, will have been worthwhile only if maximum use is made of it. However, some streetcar lines which will be upgraded to Muni Metro service are now parallelled by radial limited and express bus routes. Upon the demonstrated operational reliability of Muni Metro, operation of these bus lines should cease so long as there is available capacity on the rail system. Continuance of parallelling services, subsidized by the taxpayers to compete with their own $300 million investment, would be both

grossly wasteful and contrary to the long term interests of the Railway and the taxpayers who support it. Whether or not the Railway succeeds in eliminating bus routes which unnecessarily duplicate Muni Metro will be an excellent indicator of whether or not real transit success can be achieved in San Francisco.

4. The mode selected for operation on a route should have an optimum performance range that corresponds to the functional characteristics and operational and environmental requirements of that route.

In other words, "a place for every mode, and every mode in its place." It is uneconomic and undesirable to force any type of transit vehicle to perform work which is beyond its optimum capabilities. This practice results in continuing diseconomies to the system and substandard levels of service to the passengers. The simplistic rationalizations used in the past to substitute one mode for another must give way to analyses that consider the full range of economic, service and environmental effects of modal choice.

5. The blasé, reactive, defeatist attitude which has often characterized transit planning in the past must be replaced by a mentality of vigorous transit advocacy.

Strong pressure for improvement in Municipal Railway service, advocacy of a fair share of street space for transit leading to a true "transit first" policy, and strenuous opposition to automobile facilities that reduce potential transit patronage must emanate from the Municipal Railway itself. It must vigorously resist all attempts to reduce the extent and

quality of its service, instead of appearing to condone service reductions. It must not simply acquiesce in one-way street plans and other traffic configurations that divide and confuse transit service patterns and produce round-about routes for transit vehicles; rather it must oppose traffic proposals of this kind. It should not condone transit-first tokenism, which produces an illusion of progress and diverts attention from the real on-street needs of the system.

Beyond this, the Railway must work unceasingly to develop every potential source of patronage. This cannot be done by simply reacting to political events or to changes in ridership on existing lines; the Railway must take the initiative and act to shape as much of its operating environment and the consumption patterns of its services as possible, consistent with the best interests of the riding public. The multi-destinational network that must be brought into existence will not and cannot evolve through some process of spontaneous generation. Active managerial involvement in restructuring the network is necessary so that be a system that is capable of tapping contemporary transportation markets is achieved; the possibility that such a system might develop on its own should be dismissed immediately as wishful thinking.

It is the politically distasteful truth that the Railway will have to move to change lines that many present users will not want changed and, in some cases, introduce single transfers where "one-ride-to-Downtown" services now exist. This will have to be done in order to create the system that can survive and grow in the lean years ahead. Unhappily,

there is little evidence at present that such efforts will be successful. Attempts to make changes in the route structure, even where the case for changes is clear and strong, can be stopped by the opposition of a very small number of people, either present riders or people living on streets where new service is proposed. The Railway is in the position of having to garner support for its proposals at public hearings, but it is, in fact, impossible to develop support among users of a line that does not yet exist. Because the burden of "proof of popularity" is on the Railway, and because popularity usually depends upon prior existence of the service that the Railway wishes to inaugurate but which does not yet exist, the Muni frequently finds itself in a no-win situation, unable to obtain approval from its own Commission or the Board of Supervisors for changes in its service pattern.

This situation must be changed. Municipal Railway service is emphatically not just something that takes people downtown to work, with a little left over for poor people who have no other way to get around. That, unfortunately, is the prevailing image of transit service in American cities, an image to which San Francisco is not an outstanding exception. The Muni can and should be a multi-functional and multi-destinational system far beyond its present performance; it is a system for all the people, whatever their reason for travelling. It can fully realize its passenger-carrying potential only if management, with full political support, can bring about necessary changes. They will not just "happen".

quality of its service, instead of appearing to condone service reductions. It must not simply acquiesce in one-way street plans and other traffic configurations that divide and confuse transit service patterns and produce round-about routes for transit vehicles; rather it must oppose traffic proposals of this kind. It should not condone transit-first tokenism, which produces an illusion of progress and diverts attention from the real on-street needs of the system.

Beyond this, the Railway must work unceasingly to develop every potential source of patronage. This cannot be done by simply reacting to political events or to changes in ridership on existing lines; the Railway must take the initiative and act to shape as much of its operating environment and the consumption patterns of its services as possible, consistent with the best interests of the riding public. The multi-destinational network that must be brought into existence will not and cannot evolve through some process of spontaneous generation. Active managerial involvement in restructuring the network is necessary so that be a system that is capable of tapping contemporary transportation markets is achieved; the possibility that such a system might develop on its own should be dismissed immediately as wishful thinking.

It is the politically distasteful truth that the Railway will have to move to change lines that many present users will not want changed and, in some cases, introduce single transfers where "one-ride-to-Downtown" services now exist. This will have to be done in order to create the system that can survive and grow in the lean years ahead. Unhappily,

there is little evidence at present that such efforts will be successful. Attempts to make changes in the route structure, even where the case for changes is clear and strong, can be stopped by the opposition of a very small number of people, either present riders or people living on streets where new service is proposed. The Railway is in the position of having to garner support for its proposals at public hearings, but it is, in fact, impossible to develop support among users of a line that does not yet exist. Because the burden of "proof of popularity" is on the Railway, and because popularity usually depends upon prior existence of the service that the Railway wishes to inaugurate but which does not yet exist, the Muni frequently finds itself in a no-win situation, unable to obtain approval from its own Commission or the Board of Supervisors for changes in its service pattern.

This situation must be changed. Municipal Railway service is emphatically not just something that takes people downtown to work, with a little left over for poor people who have no other way to get around. That, unfortunately, is the prevailing image of transit service in American cities, an image to which San Francisco is not an outstanding exception. The Muni can and should be a multi-functional and multi-destinational system far beyond its present performance; it is a system for all the people, whatever their reason for travelling. It can fully realize its passenger-carrying potential only if management, with full political support, can bring about necessary changes. They will not just "happen".

6. Municipal Railway management must have a legitimate range of prerogative and must have the authority to act, within a structure which retains and ensures continued political accountability.

The authority and ability of management to act have been severely eroded over the years. The Railway is now at the point where it cannot introduce simple schedule changes without public hearings, a vote of the Public Utilities Commission and concurrence of the Board of Supervisors. Attempts to introduce improvements are constantly frustrated by the complex administrative web in which the Railway is entangled. While an important management reorganization is under way, that reorganization will only establish clear authority, responsibility and streamlined administration within the limits prescribed by external authority.

It is certainly true that to a large extent the loss of management prerogative was due, in the past, to abuses of management discretion. The postwar abandonment of the streetcar network, for example, took place virtually without public hearing, despite City charter requirements of a public hearing and concurrence of the Board of Supervisors. This practice was based on a City Attorney's opinion that the substitution of one mode for another on the same route did not constitute "abandonment" of the earlier service. The opinion was later held invalid in a court battle over replacement of the Washington-Jackson cable car line by the 80-Leavenworth bus, and a pro-forma public hearing to consider "abandonment" of the cable car line and the Geary streetcars was ultimately held some years after the actual termination of service. Public confidence in the

administration of the Railway's affairs was not enhanced by the dismemberment of most of the streetcar and cable railway system, which occurred after passage of a bond issue based on a plan calling for retention of a core of trunk streetcar lines, after reconstruction of cable trackage and several elections favoring retention of cable cars, under the resident consultantship of an ex-bus salesman from General Motors who had been the first President of the notorious National City Lines, and without public hearings despite the requirements of the City Charter. The decisions in the cable car case and subsequent litigation were intended to prevent the recurrance of these abuses, but have at the same time denied management the authority to carry out many desirable and necessary reforms.

While it may be argued that tight control on Muni/PUC prerogatives is necessary to prevent recurrence of former abuses, the clear and present need today is for major change in the way transit service is being provided. A strong, effective and accountable management is the "sine qua non" for such change; at present, the city risks greater loss from inability to act than from the likelihood of undesirable action. The present tangle of jurisdictions and counterbalances in authority not only discourages change, but seem active to prevent it. If change is the key to transit success, then one can only conclude that the current system is one which is designed to fail. A structure ensuring administrative responsiveness through political processes should be relied upon to prevent abuse, while permitting management to carry out essential reform.

7. The Municipal Railway should employ a modern fare structure and collection system which maximizes off-vehicle collection, minimizes the interference of collection with operating speed and does not result in the loss of short-distance ridership.

The importance of the fare collection method as a determinant of operating speed is not generally realized in this county. In a POM Study analysis of delays to Municipal Railway vehicles, the consultant, Wilbur Smith, found that delay due to passenger loading time accounted, on average, for about 14% of the running time; on the downtown portions of routes, the delay was commonly more than 20%.[17]

Since most of the costs of operating transit vehicles are time-related these delays are clearly significant in determining the Railway's overall costs. The opportunities for improved system efficiency (which is probably to be mandated by the state and the Metropolitan Transportation Commission) through reduction of these delays are very attractive because they can be significant and because it is largely within the power of the Railway to achieve them.

As the Railway begins to adopt more efficient vehicles, such as the Muni Metro "Light Rail Vehicles" and articulated buses and trolley coaches, the time delays due to intensive passenger loading will become more important. The Railway should respond to the introduction of new equipment in the same way the European systems have - by employing modern fare collection methods that keep as much of the fare collection off the vehicle and out of the operator's

range of responsibilities as possible. Pass, token and ticket sales which take place off the vehicle not only save operator's time but also speed the boarding process, which, as noted, is now the most significant source of delay.

Serious consideration must also be given to the employment of a "self-service" or "no-barrier" collection system on Municipal Railway vehicles. Under this fare collection arrangement, which is analogous to the parking meter system, passengers are responsible for paying their fare and having a valid "receipt" for the fare in their possession; for example, this receipt could be a valid transfer, a FASTPASS, or a validated ticket of some kind. Possession of the fare receipt would enable passengers to board vehicles through any door. Periodic checks of Railway vehicles would be made by fare inspectors, and fines for fraud would be set at a level sufficient to pay for the inspection staff. A recent study by the staff of the Metropolitan Atlanta Regional Transit Authority concludes that such an arrangement is not only feasible but desirable for American systems.[18]

This possibility is almost always rejected out-of-hand, with little or no analysis, on the assumption that Americans are somehow different than Europeans and that "it can't work here." However, the benefits of such a system are so great that casual dismissal of the proposal is no longer acceptable. In Europe, the self-service fare system has now spread from the Germanic countries to the city of Milan, Italy, which, interestingly, has a crime rate similar to that of American cities.

An experiment with this method on one streetcar line in Milan, using standard streetcars of American design, was so successful that it is now being applied to the entire transit system.[19] Every year the advantages of the self-service system become more apparent as more cities bring it into operation. It is highly significant that no city that has adopted this method of fare collection has abandoned it.

The adoption of this method in San Francisco would have many worthwhile benefits for the Municipal Railway. It would permit loading to occur at the rear door as well as the front door of buses and trolley coaches without requiring loaders, thus counteracting the slow-loading characteristics of these single-width-door vehicles. It would speed front-door loading by permitting most passengers to ignore the farebox. It would almost completely free the operator from fare-collection duties, enabling him or her to devote full attention to safe driving and to passengers' inquiries; it would completely free operators from any "police" duties involved in enforcing fare collection. It would bring many of the advantages of rapid transit to the surface sections of Muni Metro by making the three double width doors on each Light Rail Vehicle fully available to boarding passengers; this will, in fact, be a greater entry-exit capability than will be available at subway platforms, where the front doors will be inoperative. This arrangement would probably be far more effective in speeding up surface operation of Railway vehicles than current "transit preferential" measures, which have, to date, been as ineffective for transit vehicles as they have been inoffensive to motorists. It would make unnecessary the acquisition of

expensive fare collection equipment in subway stations. It would automatically make available on Railway vehicles a significant security force. It could only result in a reduction of the present high rate of fare fraud and transfer cheating.

An added benefit, which has heretofore been overlooked is that it is the only practical way to establish a downtown free-transit zone, a proposal recommended for further investigation in the Department of City Planning's Transportation Strategy and Programs Document.[20] Other methods would require that on out-bound vehicles, passengers pay their fare while exiting past the operator at the front door when beyond the free-zone boundaries. While this practice might be acceptable in Seattle or Portland, where transit patronage is comparatively light, it is out of the question in San Francisco. But with a self-service fare system, it could easily be accomplished by simply not deploying fare inspectors in the downtown free-transit zone.

The Municipal Railway fare policy itself should be considered in a more sophisticated way. This historic pattern of fare increases demonstrates quite clearly that increases in fares beget decreases in patronage; this is a widely recognized phenomenon that needs little elaboration here.

What is usually not recognized, however, is that, despite the loss in patronage overall, peak ridership remains high. Although this is gratifying in some respects, it highlights one of the Railway's basic problems - the problem of "peaking". Large numbers of vehicles are purchased and operators hired in order to meet the requirements of

rush-hour loads. During the rest of the day, and on weekends and holidays, much of the Railway's available capacity is unused. As deficits rise, further fare increases are resorted to, further reducing the off-peak patronage while only slightly reducing peak requirements.

The basic problem is that rush-hour trips are heavily work-related, and take place at times when the quality of the automobile mode is relatively low. The demand for these trips is thus less "elastic" since they have to be made; they are less susceptible to diversion because of the relatively poor quality of auto competition in the rush hour. They also tend to be longer trips than average, especially on the existing transit system, so that fare increases are "spread out" over a greater mileage. On the other hand, off-peak trips tend to be easily diverted by fare increases because of the relative ease of off-peak auto travel and the sporadic, dispersed and local character of the trips.

In order to minimize the effect of fare increases on patronage, consideration should be given to a policy of increasing fares in the peak hour only, where the market is relatively inelastic, while "holding the line" on mid-day, evening and weekend fares. It is conceded that this would add some measure of complication to the Railway fare structure. However, given the likelihood of some future fare increases, this policy, combined with the network restructuring discussed elsewhere, would minimize the effect on off-peak patronage without sacrificing the economic

health of the Railway. This would be a benefit probably well-worth the added complication.

8. The Municipal Railway must be more closely integrated into the overall Bay Area regional transit network.

As noted previously, the ability of the Railway to attract patrons depends upon the quality of its service between trip origins and destinations relative to the quality of the automobile mode for the same trip. "Quality" is a broad term, encompassing distance and other characteristics of travel.

While most trips made by residents of San Francisco and other counties are made within county boundaries, a significant number of trips are made every day across San Francico's city limits. Motorists making these trips enjoy a fully inter-connected freeway, highway and street system which, although under the jurisdiction of numerous separate agencies - federal, state and local - does not present sudden discontinuities at jurisdictional boundaries. The motorist is usually unaware of these boundaries, perceiving the highway network to be a unified whole (with the possible exception of the bridges, for which a separate toll is charged).

Contrasted with the closely-interconnected regional street and highway network is the Bay Area's hodgepodge of transit agencies, ungoverned by any overall concept of connections, fares or marketing. The adventurous few who try to make regional transit trips find multiple fares, separate

terminals and missed connections to be the rule. The result is a great relative disadvantage to transit use, and a correspondingly poor modal split.

It is beyond the capability of any one transit agency to overcome this problem, but guided by the newly organized Regional Transit Association, transit agencies can cooperatively solve it. The Municipal Railway is, in terms of its patronage and its impact on its service area, much the most important transit agency in the Bay Area. Its agressiveness in pursuing improved regional interconnections should be commensurate with this importance. Every effort should be made to widen the range of destinations easily and conveniently reached from the nearest Muni stop. Not only will this action increase the transit mobility of San Franciscans, but it will also improve the overall quality of service provided by connecting systems to residents of their service areas, and make possible a reduction in the flood of out-of-town automobiles which choke San Francisco's streets and threaten its neighborhoods.

9. A minimum city-wide volume of Municipal Railway service, expressed in terms such as "annual vehicle hours," should be written into the City Charter as the minimum level required to be operated by the Railway and funded by the city government.

The City Charter currently extends its protection to the level of service provided on Municipal Railway cable car lines; the volume of service on those lines cannot be reduced below the levels in the schedules for 1970-1971 winter service. This does not preclude

seasonal or other increases in service, nor does it prevent such re-adjustment of schedules as might be necessary from time to time to optimize operating efficiency and service to the patron.

A similar provision should be added to the Charter to protect the overall level of service provided by the Railway from annual cuts in its operating budget. Within this "service envelope," the Railway should be granted a greater degree of authority to rationalize its network and to bring its service pattern into greater accord with modern transportation patterns. Such a provision could well be considered a political precondition to broader management autonomy.

The level of service thus protected by the City Charter should not be lower than the overall level scheduled prior to the fifty "run-cuts" of 1976. That level of service should be considered a "base" figure, not precluding such increases as may be necessary in the future. Funding of that level, and of the level of maintenance necessary to operate it, should be a mandatory obligation of the Mayor and the Board of Supervisors; it is possible that such an obligation would be welcomed as it would remove the major part of the Railway budget from the realm of immediate political responsibility, consideration, expediency and backlash.

10. Failure to rationalize the Municipal Railway's service pattern through the systematic introduction of a multi-destination network will mean that neither the transit impact on the overall transportation market nor transit revenue will be maximized; these results, in combination with rising costs, will increasingly jeopardize the Railway's economic and political position, and are the necessary preconditions to a massive reduction in the system's scale of operations.

One of the great strengths of the Railway over the years has been the willingness of the people of San Francisco to underwrite the cost of its operation at a fare level low enough to encourage and sustain a high level of ridership. From the evolution of this policy in the postwar era to the late 1960's, the Railway's operating deficit was relatively small and consistent. However, in the late 60's there ensued a large increase in the scale of the operating cost; without a simultaneous increase in the fare level this was naturally accompanied by a rise in the deficit. When the Railway was hit by the inflationary spiral of the 1970's, the deficit began to grow rapidly, a trend as yet unabated. Throughout most of this period, the reported revenue patronage has remained relatively static; in fact, there has been a decline from the figures of the relatively successful mid-60's.

It must be recognized that the need for sources of funding external to the Railway is basically at odds with the economic assumptions of contemporary American society. To say this is not to assert that such a condition is either desirable or necessary, but only to identify

as a fundamental weakness of the system the position of a so-called "deficit utility" in the context of a socio-economic machine based on the profit motive. There is no question but that there has been an understanding that the Municipal Railway "deficit" is really just part of the price of functioning as a city in this period of history. This understanding has been the basis of taxpayer support for transit in San Francisco, support given with varying degrees of open-handedness over the last quarter century. But no one familiar with the present economic and political situation of American cities in general, and of San Francisco in particular, can be unaware of the fundamental conflict between the increasing economic needs of social services and the diminishing economic resources of local governments. The fiscal outlook in San Francisco is not a rosy one and it is extremely unlikely that, barring basic change, the local economic fates will be in a position to deal kindly with the Municipal Railway in the forseeable future. There is every reason to believe that the fifty "run-cuts" of 1976 could be but a foretaste of a larger and gloomier meal to follow. In times of economic stress there is a tendency among governmental jurisdictions lacking the resources to do all they might like to do, to discount the social product of transit systems. This is true even in a city as traditionally socially aware as San Francisco, where the non-monetary benefits of the Railway will be increasingly discounted as extraneous or "soft," in contrast to the cold political reality of "hard cash."

These are economic, social and political realities faced by the Railway as it pursues its destiny in the third quarter - century of its existence. There seems to be little doubt that operating expenses will continue to rise. The expectations of workers in all industries tend to rise according to the expectations of society as a whole; it is hardly likely that Municipal Railway employees will represent a significant exception to this phenomenon.

Faced, then, with increasing costs and external resources which are ever more difficult to obtain, the Railway will have to do much more to strengthen its own position. It will have to do more to effectively accomplish that which it is ostensibly supposed to do - carry passengers - and in so doing develop more of its own revenue through the farebox. It can accomplish this by carrying through on the network rationalization discussed above, and developing the increased patronage that will simultaneously maximize revenue and maximize the member of people using transit. These people can form a broader constituency for the advocacy of external sources of transit finance; as increasing numbers of people use the Railway, there will be increasing numbers of people to whom the Railway is a funding priority, and who can be expected to support the Railway through the political process. Failure to develop potential transit markets can correspondingly be equated with failure to develop sources of political and economic support.

It is certainly true that the Municipal Railway already carries a lot of passengers, and that, when contrasting it with other transit systems in comparable or even larger cities, Muni patronage is of a completely different order of magnitude. But this does not mean that all is well with the Railway and that the city can or should rest on its laurels, secure in the knowledge that regardless of how badly the Railway's affairs may seem to go from time to time it is so far ahead in patronage that no changes need be made. Rather, the level of transit patronage sustained in San Francisco despite the vicissitudes of the transit system and the city's constant pandering to the motorist means that the potential of the system - the patronage it could but which it has not developed, for reasons we have considered - is very large indeed.

This treatise opened with a quote from the late Benton Mackaye, and a related definition of transit planning, in which the key concept is "potential." The potential of the Municipal Railway has been discussed at length, and some of the fundamental steps necessary to achieve it identified. It is now a matter of <u>action</u> - whether management, staff, passengers and potential passengers, working together, can free the system from the hidden hand of the nineteenth century, and create a new Municipal Railway for our own era.

[1]Delos F. Wilcox, San Francisco's Street Railway Problem (San Francisco: City and County of San Francisco, 1927), p.232.

[2]Lately Thomas, A Debonair Scoundrel (New York: Holt, Rinehart and Winston, 1962), pp.59-60.

[3]Edgar M. Kahn, Cable Car Days in San Francisco (Stanford University, California: Stanford University Press, 1940), pp.125-126.

[4]Thomas, pp.66-67.

[5]Daniel H. Burnham, Report on a Plan for San Francisco (San Francisco: City and County of San Francisco, 1905), pp.85-86.

[6]Bion J. Arnold, Report on the Improvement and Development of the Transportation Facilities of San Francisco (San Francisco: City and County of San Francisco, 1913), p.xv.

[7]Wilcox, pp.216, 219, 236-237.

[8]Leonard V. Newton, Postwar Transit Plan for Municipal Railway, City and County of San Francisco (San Francisco: Public Utilities Commission, City and County of San Francisco, 1945), p.2.

[9]Bradford Snell, American Ground Transport (Washington, D.C.: U.S. Government Printing Office, 1974), p.A-89 (footnotes 192, 199).

[10]Marmion D. Mills, Report on the Adequacy of B.C.E. Transit Service in the City of Vanouver (Vancouver, British Columbia: British Columbia Electric Company, 1951), enclosed letter of transmittal.

[11]Marmion D. Mills, Report on the Rehabilitation of the San Francisco Municipal Railway From 1947 to 1951 (San Francisco: Public Utilities Commission, City and County of San Francisco, 1951), p.26.

[12]Ibid., p.24.

[13]Simpson and Curtin, Coordinated Transit for the San Francisco Bay Area - Now to 1975 (Final Report of Northern California Transit Demonstration Project) (San Francisco: Northern California Transit Demonstration Project, 1967), pp.11, 120, 130.

[14]San Francisco Department of City Planning, Transportation: Strategy and Programs (San Francisco: Department of City Planning, 1976), pp.13-14.

[15]Jas Kooner, Rudy Massman and Greg Thompson, Fundamentals of Successful Transit (Or, How to Make the System Get You From Here to There) (San Diego: distributed by the authors, 1976), p.4.

Also, a good general discussion of grid transit theory can be found in

Gregory Lee Thompson, "Planning Considerations for Alternative Transit Route Structures," Journal of the American Institute of Planners, (April 1977), pp.158-168.

[16]Gregory L. Thompson, A Macro Analysis of Variables Influencing Transit Usage (Vancouver, British Columbia: British Columbia Bureau of Transit Services, 1973), p.14.

This finding is corroborated by in-house Municipal Railway Planning Division study.

[17]Wilbur Smith & Associates, San Francisco Muni Transportation Planning, Operations and Marketing Study: On-Street Transit Priority Treatments (Preliminary Draft Report, April, 1976), Table 6, pp.III-4 through III-6.

[18]Manuel Padron and Richard Stanger, The MARTA Study of No-Barrier Fare Collection: Review and Discussion (Atlanta: Metropolitan Atlanta Rapid Transit Authority, Prepared for presentation to Transportation Research Board Annual Meeting of January 22, 1976).

[19]"Coping with Fare Collection," Rollsign (Special Issue of January/February 1976), p.17.

[20]Department of City Planning, op. cit., p.43.